# Akraino Edge Stack Goal and Key Principles
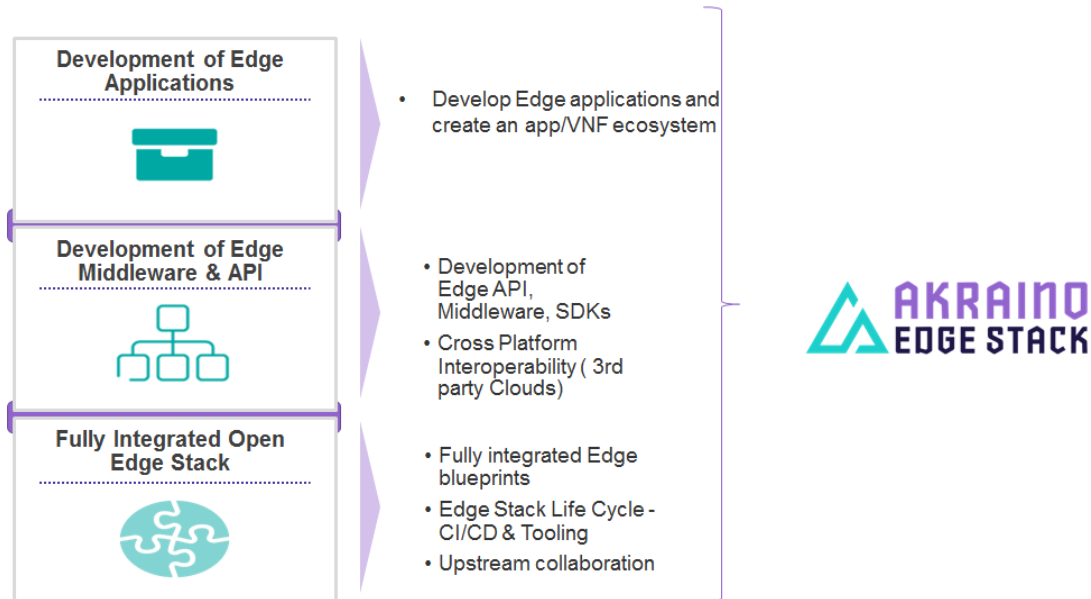
## Akraino Scope

Akraino's Scope covers everything related to Edge, as outlined in the below picture:



Akraino scope includes:

- Development of edge solution to address Telco, Enterprise, and Industrial IoT
- Develop Edge API and framework for interoperability with 3rd party Edge providers & hybrid cloud models
- Collaborate with upstream community(CI/CD& upstream process support)
- Development of Edge Middleware, SDKs, applications and create an app/VNF ecosystem
- Create Blueprints (integrated stack) to address Edge use cases:

    1. (Telco/Hosted) Edge: e.g. include ONAP, OpenStack, Airship, etc (e.g. large/medium POD)
    2. (Telco/hosted) Remote edge: Stack scale from single node to Enterprise use cases (e.g. IOT)
    3. (OTT/Enterprise/Telecom) Stack for remote edge locations (1000s) with disaggregated hardware
    4. (OTT/IIOT/Enterprise) Develop a lightweight stack for low latency remote edge and IOT gateway

## Additional Scope

- Single Pane of Glass Control - Single view management of edge resources across 10,000 + sites.
- Thin local Control Plane - Develop multiple ways to reduce local box or data center control plane footprint. For example, run control/data plane mixed with security measures, run in network switches, etc.
- Edge user/ Developer APIs - Provide agnostic Edge APIs.
- Edge IaaS/ PaaS - Wide variety of Edge applications.
- Central/Regional VIM - Alternative to Thin local Control Plane.  Remote orchestration of edge compute resources (thin control, agent only at the edge).
- Edge capabilities like analytics etc.
- Low Latency Provisioning - Dynamic Micro services enablement.
- Central/Regional ONAP **-** Enhance ONAP to support Edge scale.
- Cloud Native VNFs - Container/ Micro services based VNFs.

### Key principles

Edge computing requires significant efforts associated with seamless integration and user experience.  Also, Edge computing solutions require large-scale deployment, typically covering 1000 plus locations.  Keeping these challenges in mind, the key requirement for the Akraino project is to keep the cost low and ensure it supports large-scale deployments via automation.  The Akraino community to work with multiple upstream open source communities such as Airship, OpenStack, ONAP, etc., to deliver a fully integrated stack. Akraino will supply a fully integrated solution that supports Zero-touch provisioning, and Zero-touch lifecycle management of the integrated stack.

Akraino will follow the key principles with respect to design, build and run.

## Design Principle

Akraino will follow a holistic design with respect to availability, capacity, security, and continuity.

- Finite set of configurations – In order to reduce the complexity, the design will follow a finite set of configurations.
- Cloud native applications – The design will also include the native applications.
- Simplified security – The design will provide a secure platform and services while not being a burden for the platform.
- Autonomous, turn-key solution for service enablement to enable rapid introduction.
- Platform, VNF and application assessment and gating – assess whether the application is fit to run at the edge. (E.g. latency sensitiveness, code quality).

## Build Principle

Akraino will be built to scale in a cost-effective way and will evolve to ensure that costs are optimized.

- Low latency placement and processing to support edge drivers.
- Plug & play Modular architecture –building blocks using multiple cloud management technologies.

## Run Principle

Akraino will adhere to the following run principles:

- Zero-touch provisioning, operations, and lifecycle – reduce OpEx
- Automated maturity measurement – operations, designs, and services.
- Software abstraction based homogeneity – hide any hardware differences via software.
- Common platform and service orchestration – ONAP.